

Federal Communications Commission

§ 76.609

§ 76.601(b)(2) at the complaining subscriber's terminal. Further, should the problem be found to be system-wide, the Commission may order that the full number of channels as indicated in § 76.601(b)(2) be tested at all required locations for future proof-of-performance tests.

NOTE 6: No State or franchising authority may prohibit, condition, or restrict a cable system's use of any type of subscriber equipment or any transmission technology.

[37 FR 3278, Feb. 12, 1972, as amended at 37 FR 13867, July 14, 1972; 40 FR 2690, Jan. 15, 1975; 40 FR 3296, Jan. 21, 1975; 41 FR 53028, Dec. 3, 1976; 42 FR 21782, Apr. 29, 1977; 47 FR 21503, May 18, 1982; 50 FR 52466, Dec. 24, 1985; 51 FR 1255, Jan. 10, 1986; 52 FR 22461, June 12, 1987; 57 FR 11002, Apr. 1, 1992; 57 FR 61010, Dec. 23, 1992; 58 FR 44952, Aug. 25, 1993; 59 FR 25342, May 16, 1994; 61 FR 18510, Apr. 26, 1996; 61 FR 18978, Apr. 30, 1996; 65 FR 53616, Sept. 5, 2000; 69 FR 2849, Jan. 21, 2004]

EFFECTIVE DATE NOTE: At 69 FR 57861, Sept. 28, 2004, § 76.605 was amended by revising paragraphs (a) introductory text, (a)(1)(ii) and (a)(6) by revising paragraph (a)(7) introductory text and by removing paragraphs (a)(7)(i) through (a)(7)(iv) introductory text and by redesignating paragraphs (a)(7)(iv)(A) through (a)(7)(iv)(C) as paragraphs (a)(7)(i) through (a)(7)(iii); and in paragraph (b) by revising Note 3, effective Oct. 28, 2004. For the convenience of the user, the revised text is set forth as follows:

§ 76.605 Technical standards.

(a) The following requirements apply to the performance of a cable television system as measured at any subscriber terminal with a matched impedance at the termination point or at the output of the modulating or processing equipment (generally the headend) of the cable television system or otherwise as noted. The requirements are applicable to each NTSC or similar video downstream cable television channel in the system:

(1) * * *

(ii) Cable television systems shall transmit signals to subscriber premises equipment on frequencies in accordance with the channel allocation plan set forth in CEA-542-B: "Standard: Cable Television Channel Identification Plan," (Incorporated by reference, see § 76.602).

* * * * *

(6) The amplitude characteristic shall be within a range of ± 2 decibels from 0.75 MHz to 5.0 MHz above the lower boundary frequency of the cable television channel, referenced to the average of the highest and lowest amplitudes within these frequency boundaries. The amplitude characteristic shall be measured at the subscriber terminal.

(7) The ratio of RF visual signal level to system noise shall not be less than 43 decibels. For class I cable television channels, the requirements of this section are applicable only to:

* * * * *

NOTE 3: The requirements of this section shall not apply to devices subject to the TV interface device rules under part 15 of this chapter.

* * * * *

§ 76.606 Closed captioning.

(a) As of June 30, 1992, the operator of each cable television system shall not take any action to remove or alter closed captioning data contained on line 21 of the vertical blanking interval.

(b) As of July 1, 1993, the operator of each cable television system shall deliver intact closed captioning data contained on line 21 of the vertical blanking interval, as it arrives at the headend or from another origination source, to subscriber terminals and (when so delivered to the cable system) in a format that can be recovered and displayed by decoders meeting § 15.119 of this chapter.

[57 FR 11003, Apr. 1, 1992]

§ 76.609 Measurements.

(a) Measurements made to demonstrate conformity with the performance requirements set forth in §§ 76.601 and 76.605 shall be made under conditions which reflect system performance during normal operations, including the effect of any microwave relay operated in the Cable Television Relay (CARS) Service intervening between pickup antenna and the cable distribution network. Amplifiers shall be operated at normal gains, either by the insertion of appropriate signals or by manual adjustment. Special signals inserted in a cable television channel for measurement purposes should be operated at levels approximating those used for normal operation. Pilot tones, auxiliary or substitute signals, and nontelevision signals normally carried on the cable television system should be operated at normal levels to the extent possible. Some exemplary, but not

mandatory, measurement procedures are set forth in this section.

(b) When it may be necessary to remove the television signal normally carried on a cable television channel in order to facilitate a performance measurement, it will be permissible to disconnect the antenna which serves the channel under measurement and to substitute therefor a matching resistance termination. Other antennas and inputs should remain connected and normal signal levels should be maintained on other channels.

(c) As may be necessary to ensure satisfactory service to a subscriber, the Commission may require additional tests to demonstrate system performance or may specify the use of different test procedures.

(d) The frequency response of a cable television channel may be determined by one of the following methods, as appropriate:

(1) By using a swept frequency or a manually variable signal generator at the sending end and a calibrated attenuator and frequency-selective voltmeter at the subscriber terminal; or

(2) By using either a multiburst generator or vertical interval test signals and either a modulator or processor at the sending end, and by using either a demodulator and either an oscilloscope display or a waveform monitor display at the subscriber terminal.

(e) System noise may be measured using a frequency-selective voltmeter (field strength meter) which has been suitably calibrated to indicate rms noise or average power level and which has a known bandwidth. With the system operating at normal level and with a properly matched resistive termination substituted for the antenna, noise power indications at the subscriber terminal are taken in successive increments of frequency equal to the bandwidth of the frequency-selective voltmeter, summing the power indications to obtain the total noise power present over a 4 MHz band centered within the cable television channel. If it is established that the noise level is constant within this bandwidth, a single measurement may be taken which is corrected by an appropriate factor representing the ratio of 4

MHz to the noise bandwidth of the frequency-selective voltmeter. If an amplifier is inserted between the frequency-selective voltmeter and the subscriber terminal in order to facilitate this measurement, it should have a bandwidth of at least 4 MHz and appropriate corrections must be made to account for its gain and noise figure. Alternatively, measurements made in accordance with the NCTA Recommended Practices for Measurements on Cable Television Systems, 2nd edition, November 1989, on noise measurement may be employed.

(f) The amplitude of discrete frequency interfering signals within a cable television channel may be determined with either a spectrum analyzer or with a frequency-selective voltmeter (field strength meter), which instruments have been calibrated for adequate accuracy. If calibration accuracy is in doubt, measurements may be referenced to a calibrated signal generator, or a calibrated variable attenuator, substituted at the point of measurement. If an amplifier is used between the subscriber terminal and the measuring instrument, appropriate corrections must be made to account for its gain.

(g) The terminal isolation between any two terminals in the cable television system may be measured by applying a signal of known amplitude to one terminal and measuring the amplitude of that signal at the other terminal. The frequency of the signal should be close to the midfrequency of the channel being tested. Measurements of terminal isolation are not required when either:

(1) The manufacturer's specifications for subscriber tap isolation based on a representative sample of no less than 500 subscribers taps or

(2) Laboratory tests performed by or for the operator of a cable television system on a representative sample of no less than 50 subscriber taps, indicates that the terminal isolation standard of § 76.605(a)(9) is met.

To demonstrate compliance with § 76.605(a)(9), the operator of a cable television system shall attach either such manufacturer's specifications or laboratory measurements as an exhibit to each proof-of-performance record.

(h) Measurements to determine the field strength of the signal leakage emanated by the cable television system shall be made in accordance with standard engineering procedures. Measurements made on frequencies above 25 MHz shall include the following:

(1) A field strength meter of adequate accuracy using a horizontal dipole antenna shall be employed.

(2) Field strength shall be expressed in terms of the rms value of synchronizing peak for each cable television channel for which signal leakage can be measured.

(3) The resonant half wave dipole antenna shall be placed 3 meters from and positioned directly below the system components and at 3 meters above ground. Where such placement results in a separation of less than 3 meters between the center of the dipole antenna and the system components, or less than 3 meters between the dipole and ground level, the dipole shall be repositioned to provide a separation of 3 meters from the system components at a height of 3 meters or more above ground.

(4) The horizontal dipole antenna shall be rotated about a vertical axis and the maximum meter reading shall be used.

(5) Measurements shall be made where other conductors are 3 or more meters (10 or more feet) away from the measuring antenna.

(i) For systems using cable traps and filters to control the delivery of specific channels to the subscriber terminal, measurements made to determine compliance with § 76.605(a) (5) and (6) may be performed at the location immediately prior to the trap or filter for the specific channel. The effects of these traps or filters, as certified by the system engineer or the equipment manufacturer, must be attached to each proof-of-performance record.

(j) Measurements made to determine the differential gain, differential phase and the chrominance-luminance delay inequality (chroma delay) shall be made in accordance with the NCTA Recommended Practices for Measurements on Cable Television Systems,

2nd edition, November 1989, on these parameters.

[37 FR 3278, Feb. 12, 1972, as amended at 37 FR 13867, July 14, 1972; 41 FR 10067, Mar. 9, 1976; 42 FR 21782, Apr. 29, 1977; 49 FR 45441, Nov. 16, 1984; 57 FR 11004, Apr. 1, 1992; 57 FR 61011, Dec. 23, 1992; 58 FR 44952, Aug. 25, 1993]

§ 76.610 Operation in the frequency bands 108–137 and 225–400 MHz—scope of application.

The provisions of §§ 76.611 (effective July 1, 1990), 76.612, 76.613, 76.614 and 76.1803 and 76.1804 are applicable to all cable television systems transmitting carriers or other signal components carried at an average power level equal to or greater than 10^{-4} watts across a 25 kHz bandwidth in any 160 microsecond period, at any point in the cable distribution system in the frequency bands 108–137 and 225–400 MHz for any purpose. For grandfathered systems, refer to §§ 76.618 and 76.619.

NOTE 1: See the provisions of § 76.616 for cable operation near certain aeronautical and marine emergency radio frequencies.

NOTE 2: Until January 1, 1990, the band 136–137 MHz is allocated as an alternative allocation to the space operation, meteorological-satellite service and the space research service on a primary basis. After January 1, 1990, the space service will become secondary to aeronautical mobile service radio. Until January 1, 1990, the band 136 to 137 MHz is excluded from the rule sections regarding protection of aeronautical frequencies.

[50 FR 29399, July 19, 1985, as amended at 65 FR 53616, Sept. 5, 2000]

EFFECTIVE DATE NOTE: At 69 FR 57862, Sept. 28, 2004, § 76.610 was revised, effective Oct. 28, 2004. For the convenience of the user, the revised text is set forth as follows:

§ 76.610 Operation in the frequency bands 108–137 and 225–400 MHz—scope of application.

The provisions of §§ 76.605(a)(12), 76.611, 76.612, 76.613, 76.614, 76.616, 76.617, 76.1803 and 76.1804 are applicable to all MVPDs (cable and non-cable) transmitting carriers or other signal components carried at an average power level equal to or greater than 10^{-4} watts across a 25 kHz bandwidth in any 160 microsecond period, at any point in the cable distribution system in the frequency bands 108–137 and 225–400 MHz for any purpose. Exception: Non-cable MVPDs serving less than 1000 subscribers and less than 1000 units do not have to comply with § 76.1803.